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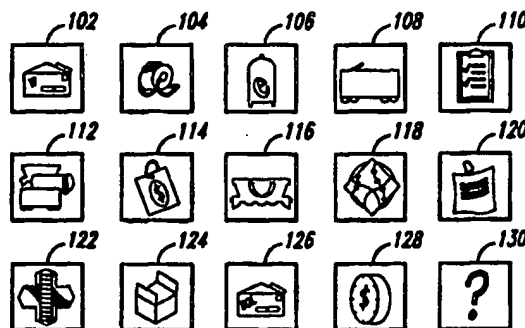
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(54) Title: SYSTEM AND METHOD FOR GRAPHICALLY ORGANIZING AND ACCESSING FREIGHT TRANSPORTATION NETWORK INFORMATION ON A MAP OVER THE INTERNET

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(57) Abstract

A system and method for graphically organizing freight transportation network information on a map over the internet. A corridor selector selects a geographic layout of a variety of transportation corridors for display on a map. A shipment selector displays a user-selected portion of all the cargo being transported on any of the transportation corridors. A geographic feature selector selects various geographic features for display on or removal from the map. Within the method of the present invention, a map panel displays a plurality of transportation corridors and geographic features, in response to user selections.

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**SYSTEM AND METHOD FOR GRAPHICALLY ORGANIZING
AND ACCESSING FREIGHT TRANSPORTATION NETWORK
INFORMATION ON A MAP OVER THE INTERNET**

CROSS-REFERENCE TO RELATED APPLICATIONS

5 This application relates to and incorporates by reference co-pending U.S. Patent Application Serial No. 08/550,881, entitled "An Object Based Railroad Transportation Network Management System and Method," filed on October 31, 1995, by inventor Marshall A. Gibbs. This related application is commonly assigned
10 to CSX Technology, Inc., a Virginia corporation.

BACKGROUND OF THE INVENTION

1 **Field of the Invention**

The present invention relates generally to systems and methods for accessing information over the internet, and more particularly for graphically organizing freight
15 transportation network information on a map over the internet.

2. **Discussion of Background Art**

Major railway, trucking and shipping industries transport freight for a very large number of customers over a wide geographical area. Customers, for their own internal reasons, often need access to the current status of a shipment. In response,
20 many of the major transportation industries provide various traditional methods by which a customer may obtain the current status of their shipments.

However, due to the growing popularity of the World Wide Web, some transportation concerns have created web pages which their customers may access to obtain such status information. Unfortunately, these Web-Pages, as they are called,
25 are often difficult to use and poorly designed. They often require the customer to page back and forth through many display screens just to obtain basic information

about the status of their freight. As a result some customers find the more traditional methods of obtaining shipment information, such as calling up the carrier and obtaining information from the carrier's service representatives, much easier. Such behavior on the part of the customer defeats the whole purpose of the carrier's investment in the Web-Page and furthermore requires the carrier to finance a customer support staff that is larger than otherwise required.

What is needed is a system and method for displaying freight transportation network information that solves the foregoing problems of conventional freight transportation network information systems.

10

SUMMARY OF THE INVENTION

The present invention is a system and method accessing freight transportation network information over the internet. Within the system of the present *invention*, a corridor selector displays on a map a geographic layout of a variety of transportation corridors. These transportation corridors are easily added to or removed from the map display in response to user selections. A shipment selector displays a user-selected -portion of all the cargo being transported on any of the transportation corridors. A geographic feature selector displays on or removes from the map various geographic features, such as coastlines, rivers, state borders, mountains, cities, and railroad terminals.

20 Within the method of the present *invention*, a plurality of transportation corridors and geographic features are displayed on a map panel in response to user selections.

The system and method of the present invention is particularly advantageous over the prior art because various transportation corridors and the shipments they carry are easily and readily modified, and examined at various levels of detail.

25 These and other aspects of the invention are recognizable by those skilled in the art upon completing a review of the detailed description, drawings, and claims set forth below.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is an exemplary pictorial diagram of an internet interface within a freight transportation network;

Figure 2 is an exemplary pictorial diagram of a waybill dialog window;

5 Figure 3 is an exemplary pictorial diagram of a car ordering dialog window,

Figure 4 is an exemplary pictorial diagram of a shipment status dialog window;

Figure 5 is an exemplary pictorial diagram of a pool management dialog window;

10 Figure 6 is an exemplary pictorial diagram of a price dialog window;

Figure 7 is an exemplary pictorial diagram of an UMLER dialog window;

Figure 8 is an exemplary pictorial diagram of a bulletin board dialog window;

Figure 9 is an exemplary pictorial diagram of a first yard management dialog window;

15 Figure 10 is an exemplary pictorial diagram of a second yard management dialog window;

Figure 11 is an exemplary pictorial diagram of a first freight claims dialog window;

20 Figure 12 is an exemplary pictorial diagram of a second freight claims dialog window;

Figure 13 is a block diagram of a system for displaying freight transportation network information via the internet interface;

Figure 14 is an exemplary pictorial diagram of a first output display generated by the system of Figure 13;

Figure 15 is an exemplary pictorial diagram of a second output display generated by the system of Figure 13;

Figure 16 is an exemplary pictorial diagram of a third output display generated by the system of Figure 13;

5 Figure 17 is an exemplary pictorial diagram of a fourth output display generated by the system of Figure 13;

Figure 18 is an exemplary pictorial diagram of a fifth output display generated by the system of Figure 13;

10 Figure 19 is an exemplary pictorial diagram of a sixth output display generated by the system of Figure 13; and

Figure 20 is a flowchart of method steps for displaying freight transportation network information.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

15 Figure 1 is an exemplary pictorial diagram of an internet interface 100 with a freight transportation network. The internet interface 100 (entitled a "Transportation Workstation Network" or "TWSNet") provides an online interactive reporting tool that acts as a complete electronic interface between a transportation provider and its customers. The transportation provider can provide rail, highway, water, or air
20 shipping-services. Using the interface 100, customers can easily place orders and access information about their shipments.

The interface 100 preferably uses a standard web browser supporting object-oriented Java and HTML based applications. Information security is preferably provided through a Secure Sockets layer. The interface 100 is preferably
25 supported at by a three-tier architecture comprised of web enabled client software, a web server in a trusted domain, and a host mainframe enterprise data warehouse. The interface 100 is firewall-protected and uses redundant production servers and TCP/IP

network communications. Customers accessing the interface 100 need only use standard off-the-shelf equipment, such as a computer with at least an Intel 386 CPU, a 14.4Kbps modem, and 8 MBs of RAM.

The interface 100 provides a user with the following software modules:

5 Waybill Retrieval 102, a transportation provider directory lookup 104, e-mail 106, car ordering 108, shipment status 110, pool management 112, price inquiry (secure) 114, UMLER retrieval 116, shipment tracking 118, bulletin board service 120, customer yard management 122, freight claims 124, bill of lading 126, demurrage charges 128, and help 130.

10 Figure 2 is an exemplary pictorial diagram of a waybill dialog window generated by the waybill retrieval module 102. The waybill retrieval module 102 enables a user to retrieve the waybills for their shipments with the transportation provider. This module supports the retrieval of at least a year's worth of Carload, TOFC/COFC, Coal/Phosphate, and Switch waybills. An equipment initial, a number
15 for the shipment, and an optional date range are used as search parameters. If the data range is supplied, all-waybills for the given range are retrieved. If the data range is omitted, a waybill associated with a last movement of the shipment is returned. The user can view, print, and export the waybills.

The directory module 104 provides a user with a means to access contact
20 information for the transportation provider's personnel. For the best results, a full first and last name should be entered. Searches may also be conducted with partial name information.

The e-mail module 106 facilitates correspondence between a user and the transportation provider personnel. The e-mail module 106 allows a user to
25 communicate with agents at ramps and rail yards, sales personnel, marketing personnel, pricing personnel, and AAR destinations.

Figure 3 is an exemplary pictorial diagram of a car ordering dialog window generated by the car ordering module 108. The car ordering module 108 provides a user with a method to order empty cars for an upcoming week, forecasts car needs for

the week after next (in order to provide sufficient cars to that geographical area), and checks the status of an order. The profile feature of this module contains pertinent shipping information such as the type of cars needed.

Figure 4 is an exemplary pictorial diagram of a shipment status dialog window generated by the shipment status module 110. The shipment status module 110 provides a user with up-to-date car movement information for user-defined pools and corporate-defined fleets. The user can view, print and export Electronic Data Interchange reports, such as weight messages, inventory reports, arrival notices, and standing orders. A Fleet Tracing feature provides the user with up to the minute movement information on their pools and fleets of equipment transported by the transportation provider. A Fleet Updating feature provides the user with an ability to add and/or delete equipment from their pools. A Fleet Listing facility provides the user with a means to obtain a list of all of the equipment that is currently defined for a specific pool or fleet.

Figure 5 is an exemplary pictorial diagram of a pool management dialog window generated by the pool management module 112. The pool management module 112 provides a user with a method to create, edit, and delete user-defined pools of equipment. These pools of equipment allow the user to initiate inquiries within other modules based on groups of pre-defined equipment.

Figure 6 is an exemplary pictorial diagram of a price dialog window generated by the price information module 114. The price information module 114 provides a user with a means to look up contact information for market managers of specific commodities and to request price information. The user is provided with prices for any Standard Transportation Commodity Code (STCC). The user can also retrieve groups of information to be viewed simultaneously. The user can save, retrieve, delete, or print the information provided. The user may also export information to ASCII delimited files. The rates, rules and charges provided are preferably for information only and are subject to change.

Figure 7 is an exemplary pictorial diagram of an UMLER dialog window generated by the UMLER module 116. The UMLER module 116 provides a user with a means to acquire physical specifications for equipment used to carry freight. The specifications can be obtained by entering an equipment initial and number or
5 through a pool listing that is maintained in the pool management module 112. The user can view, print, and export the list as well as the specifications received from the mainframe.

The shipment tracking module 118 allows a user to retrieve up-to-date transport movement information. The transport movement data is projected onto a
10 map that allows the user to select transports through a graphical user interface. The user is provided with an origin, destination, current location, commodity, and other shipment information for each transport selected. The user can also view trace events for any of the transports. The shipment tracking module 118 is further discussed in reference to Figure 13.

15 Figure 8 is an exemplary pictorial diagram of a bulletin board dialog window generated by the bulletin board module 120. The bulletin board module 120 enables a user to view current information about the internet interface 100 from the transportation provider and other customers. The user can post information regarding internet interface 100 and follow-up on correspondences from authors of other
20 postings. The bulletin board module 120 can support help topics, news items, interface bugs, and user feedback.

Figure 9 is an exemplary pictorial diagram of a first yard management dialog window generated by the yard management module 122. Figure 10 is an exemplary pictorial diagram of a second yard management dialog window generated by the yard
25 management module 122. The yard management module 122 is configured to process information according to a user's plant or the transportation provider's yard. The Yard Management module 122 preferably permits the user to inquire about en-route rail cars (cars destined for the user's plant), industrial inventory cars (cars at the plant's siding), customer arrival notifications (a history of arrival notices), and
30 plant switches (a list of plant switch summaries). In addition, the user can generate a

plant switch request for transports that reside at either the transportation provider's switching yard or at the plant's siding. This request automatically transmits any required yard and industrial siding information to the transportation provider. The user can also change previously requested plant switch instructions, if a work order
5 has not yet been generated by the transportation provider.

Figure 11 is an exemplary pictorial diagram of a first freight claims dialog window generated by the freight claims module 124. Figure 12 is an exemplary pictorial diagram of a second freight claims dialog window generated by the freight claims module 124. The freight claims module 124 provides a user with a method of
10 submitting claims for delayed shipment of commodities and/or damages to shipments of goods. Claims can be edited prior to submission and saved. Claim specifics, such as commodities, quantities, salvage and dollar amounts can be amended after a claim is submitted. The status of claims and claim details may also be accessed.

The bill of lading module 126 provides a user with a method to create bills of
15 lading and send them to the transportation provider. A pattern feature is included which allows the user to save and recall frequently used billing information for added convenience in creating a new bill of lading. The user can create, edit, and export their own patterns. The user can also export a bill of lading, archive an acknowledged bill of lading, and restore an acknowledged bill of lading. A waybill
20 is automatically generated when a bill of lading is received by the transportation provider.

The Demurrage Charges module 128 enables a user to review each of their plant's demurrage accounts for a current month and any of the previous five months. By choosing one or more accounts from a list for the specified month, the detailed
25 demurrage information can be analyzed by an entire account or just by specific transport services that service the account.

The help module 130 provides the user with documentation to assist in understanding features available within each of the modules discussed above. The

help module 130 also provides instructions for performing internet interface 100 tasks.

Figure 13 is a block diagram of a system 1300 for displaying freight transportation network information via the internet interface 100. The system 1300 preferably includes a user interface 1302, a corridor selector 1304, a shipment selector 1306, a geographic feature selector 1308, a fly-over text generator 13 10, a display generator 1312, a display 1314, and a transportation network database 1316. The user interface 1302 is coupled to the selectors 1304, 1306 and 1308, and the generator 13 10 via path 1318. The selectors 1304, 1306 and 1308, and the generator 13 10 are coupled to the display generator 1312 via path 1320 and to the transportation network database 1316 via path 1322. The display generator 1312 is coupled to the display 1314 via path 1324.

The software modules and hardware shown in Figure 13 are divided between a user's client computer (not shown), the web server, and the host mainframe. Those skilled in the art will recognize how the software modules and hardware should best be allocated between these three computer systems.

The user interface 1302 functions as an interface device between a user and the system 1300. The user interface 1302 preferably includes a keyboard and a mouse and transmits user selection commands from the keyboard and cursor position commands from the mouse to the selectors 1304, 1306 and 1308, and the generator 13 10.

The corridor selector 1304 is coupled to retrieve selected transportation corridor information from the transportation network database 1316 and provide the information to the display generator 1312 in response to a user selection from the user interface 1302. The transportation corridor information preferably includes a set of latitude and longitude points which describe a geographic layout of the transportation corridor and may include a header which uniquely identifies individual corridors within a network of corridors. Some of the possible transportation corridors to select from include trains, highways, roads, waterways, and shipping

channels. The transportation corridors are selectively added to or erased from the display 1314, in response to a user command, with no limit on a number of corridors displayed at one time. The corridors overlay one another when more than one corridor is displayed.

- 5 The shipment selector 1306 is coupled to retrieve selected shipment information from the transportation network database 1316 and provide the information to the display generator 1312 in response to a user selection from the user interface 1302. The shipment information preferably includes a set of latitude and longitude points which describes a current location for each shipment and may
- 10 also include information which identifies a user who authorized the shipment, the origin of the shipment, the destination of the shipment, and what goods are being carried. The shipment selector 1306 also is configured to request a user password before permitting selected shipments from being displayed. For example, a customer checking the status of their shipment over the internet is asked for their password.
- 15 The shipment selector 1306 would then only display that customer's shipment information on the display 1314. Shipment information for all other customers is not displayed.

- The geographic feature selector 1308 is coupled to retrieve selected geographic feature information from the transportation network database 1316 and
- 20 provide the information to the display generator 1312 in response to a user selection from the user interface 1302. The geographic feature information preferably includes a set of latitude and longitude points which describe a layout of some geographic feature. Some of the possible geographic features from which to select include coastlines, rivers, state borders, mountains, cities, and railroad terminals, as well as
- 25 any other geographic feature identified by latitude and longitude coordinates. When displayed, the geographic features overlay one another, and any number of geographic features are selectively addable to or erasable from the display 1314, in response to a command from the user interface 1302.

- The fly-over text generator 1310 is coupled to retrieve selected information
- 30 from the transportation network database 1316 and provide the information to the

display generator 1312 in response to a cursor position on the display 1314. Flyover text is a recently coined term referring to when a pointer of some sort, such as a mouse pointer, is placed over an area of a computer display, and, by this action displays text which relates to what the pointer is positioned over on the display.

5 Typically, fly-over text functions in a helping role, telling a user what the function of a particular key is or providing some information about an displayed graphic. In the present invention, the user interface 1302 receives cursor movements when a user moves the mouse. The fly-over text can include any amount of information relevant to the cursor's current position on the display 1314, such as the cursor's current

10 latitude and longitude, the name of a terminal that the cursor is resting over, any of the shipment information discussed above when the cursor is resting over a shipment icon, and any other information to which a user would typically have access. Specific examples of fly-over text are provided in Figures 3, 4, 5, 7 and 8.

The display generator 1312 is coupled to retrieve data and commands from

15 the selectors 1304, 1306, and 1308 and the generator 1310. The display generator 1312 then drives the display 1314 to ensure that the received information is properly formatted. If the information to be displayed is stored in the database 1316, the selectors 1304, 1306, and 1308 and the generator 13 10 pass the display generator 1312 a reference pointer indicating where the information to be displayed is stored in

20 the database 1316. The display generator 1312 then directly accesses the referenced data from the database 1316.

The display 1314 is a device such as a monitor for displaying information. The transportation network database 1316 is a memory device for storing data, such as information about transportation networks and the goods such networks carry.

25 Other computer systems (not shown) are preferably connected to the database 1316 and feed information into the database, which the system 1300 may then access.

Each of the selectors 1304, 1306, 1308 and the generators 1310, 1312 are software modules comprised of computer program instructions that run on a computer (not shown). The computer preferably includes a processing unit and a

30 memory. The memory preferably stores computer program instructions for

controlling how the processing unit accesses and transforms the data. Those skilled in the art will recognize that the internal memory is supplementable with other computer-useable storage media, including a compact disk, a magnetic drive or a dynamic random access memory.

5 Figure 14 is an exemplary pictorial diagram of a first output display 1400 generated by the system 1300 of Figure 13. The display 1400 preferably includes a control panel 1402 and a map panel 1404 within a standard windows format. The control panel 1402 preferably includes a user interest area 1406, a reload- button 1407, an information area 1408, a terminal area 1410, and a preferences area 1412.

10 The user interest area 1406 is for selecting a geographic region for display on the map panel 1404. The user interest area 1406 also permits a user to zoom in on any region on the map panel 1404. The reload button 1407 allows a user to update the information displayed in the panels 1402 and 1404 with data stored in the transportation network database 1316. The information area 1408 is for displaying

15 fly-over text in response to a cursor position on the map panel 1404. The terminal area 14 10 allows a user to select which terminal appears on the map panel 1404. As shown within the terminal area 14 10, all major, intermediate, and/or minor terminals are displayable, as well as specific terminals from within the box labeled "No Label." The preferences area 1412 displays a selection of transportation corridors which is

20 displayable on the map panel 1404 in any combination. More than one transportation corridor is selectable at a time for display. Other control panels (not shown) control which geographic features are also displayed on the map and allow users to select various customer-specific shipment data for display.

Based on the settings in the control panel 1402, the map panel 1404, as .

25 shown in Figure 14, displays a map of part of the Northern Hemisphere. The following information is shown on the example map-panel 1404: coastal features 1414, major terminals 1416, trains 1418, railroad corridors 1420, and road corridors 1422.

Figure 15 is an exemplary pictorial diagram of a second output display 1500

30 generated by the system of Figure 13. The second output display 1500 differs from

the first output display 1400 in the following ways. First, in the preferences area 1412, only the rail corridors 1420 and the coastlines 1414 have been selected. Thus, the second output display 1500 does not show the road corridors as the first output display 1400 did. Second, a cursor 1502 has now been positioned over the map panel 1404 and the fly-over text in the information area 1408 shows the cursor's 1502 latitude and longitude 1504.

Figure 16 is an exemplary pictorial diagram of a third output display 1600 generated by the system of Figure 13. The third output display 1600 differs from the first output display 1400 in the following ways. First, in the preferences area 1412, only the road corridors 1422 and the coastlines 1414 have been selected. Thus, the third output display 1600 does not show the rail corridors as the first output display 1400 did. Second, the cursor 1502 has been moved to a new location on the map panel 1404, which is over a terminal, and as a result the flyover text in the information area 1408, not only shows the cursor's 1502 latitude and longitude 1504, but also shows a terminal label 1602 and a terminal 1604 corresponding to the cursor's 1502 position.

Figure 17 is an exemplary pictorial diagram of a fourth output display 1700 generated by the system of Figure 13. The fourth output display 1700 differs from the first output display 1400 in the following ways. First, in the preferences area 1412, only the rail corridors 1420 and the road corridors 1422 have been selected. Thus, the third output display 1600 does not show the coastlines 1414 as the first output display 1400 did. Second, the user interest area 1406 has been set to "CSX" and as a result a list of all cities and regions serviced by CSX Transportation is shown within a window 1702.

Figure 18 is an exemplary pictorial diagram of a fifth output display 1800 generated by the system of Figure 13. The fifth output display 1800 shows the cursor 1502 positioned near a train 1802 on the map panel 1404. As a result, the fly-over text in the information area 1408 displays a latitude and longitude 1804, a label 1806, and a name 1808 for the train 1802.

Figure 19 is an exemplary pictorial diagram of a sixth output display 1900 generated by the system of Figure 13. The sixth output display 1900 shows the cursor 1502 positioned near a terminal 1902 on the map panel 1404. As a result, the fly-over text in the information area 1408 displays a latitude and longitude 1904, a label 1906, and a name 1908 for the train 1902.

Figure 20 is a flowchart for one embodiment of exemplary method steps for displaying freight transportation network information. Those skilled in the art would recognize that the Figure 20 flowchart shows only one possible order for the steps listed below. The method begins in step 2002 where the display generator 1312 defines the map panel 1404 on the computer display 1314. Next, in step 2004, the corridor selector 1304 selects one or more transportation corridors of a first type for display on the map panel 1404, in response to a command from the user interface 1302. In step 2006, the corridor selector 1304 then selects one or more transportation corridors of a second type for display on the map panel 1404 in response to a user selection. The second type of transportation corridor overlays the first type of transportation corridor. In step 2008, the corridor selector 1304 selects one or more transportation corridors of any number of additional types for display on the map panel 1404, in response to commands from the user interface 1302. These additional types of transportation corridors overlay the first and second types of transportation corridors. Next in step 2010, the corridor selector 1304 erases one of the types of transportation corridors from the map panel 1404 in response to a user selection.

In step 2012, the geographic feature selector 1308 overlays geographic features on the map panel 1404 in response to a user selection. In step 2014, the fly-over text generator 1310 displays fly-over text in the information area 1408 as the cursor passes over various predetermined areas on the map panel 1404. Next in step 2016, the shipment selector 1306 password protects all freight shipment information so that only authorized personnel can have access to a customer's freight shipment information. In step 2018, the shipment selector 1306 identifies user-selected freight shipments on one or more of the transportation corridors

displayed on the map panel 1404. After step 2018, the exemplary Figure 20 display process is complete.

While the present invention has been described with reference to a preferred embodiment, those skilled in the art recognize that various modifications are possible.

- 5 Variations upon and modifications to the preferred embodiment are provided by the present invention, which is limited only by the following claims.

WHAT IS CLAIMED IS:

1. A method for graphically organizing freight transportation network information on a map over the internet, comprising the steps of:
defining a map panel on a computer display;
5 displaying a first type of transportation corridor on the map panel in response to a first user selection; and
displaying a second type of transportation corridor on the map panel, which overlays the first type of transportation corridor, in response to a second user selection.
- 10 2. The method of claim 1, further comprising the step of displaying a third type of transportation corridor on the map panel, which overlays the first and second types of transportation corridors, in response to a third user selection.
3. The method of claim 2, further comprising the step of erasing one of the types of transportation corridors from the map panel in response to a fourth user selection.
- 15 4. The method of claim 1, wherein the step of displaying a first type of transportation corridor further includes the step of displaying a highway system.
5. The method of claim 1, wherein the step of displaying a first type of transportation corridor further includes the step of displaying a road system.
6. The method of claim 1, wherein the step of displaying a first type of
20 transportation corridor further includes the step of displaying a railway system.
7. The method of claim 1, wherein the step of displaying a first type of transportation corridor further includes the step of displaying a shipping channel system.
8. The method of claim 1, wherein the step of displaying a first type of
25 transportation corridor further includes the step of displaying a river system.

9. The method of claim 1, further comprising the step of identifying freight shipments on one of the displayed transportation corridors.
10. The method of claim 9, further comprising the step of requesting an identification password from a particular customer, wherein the step of identifying
5 further includes the step of identifying only those freight shipments corresponding to the particular customer.
11. The method of claim 1, further comprising the step of overlaying geographic features on the map panel in response to a third user selection.
12. The method of claim 11, wherein the step of overlaying further includes the
10 step of overlaying cities on the map panel.
13. The method of claim 11, wherein the step of overlaying further includes the step of overlaying shipping terminals on the map panel.
14. The method of claim 11, wherein the step of overlaying further includes the step of overlaying a coastline on the map panel.
- 15 15. The method of claim 11, wherein the step of overlaying further includes the step of overlaying any geographic feature on the map panel identifiable by a latitude and a longitude.
16. A system for graphically organizing freight transportation network information on a map over the internet, comprising:
20 means for defining a map panel on a computer display;
means for displaying a first type of transportation corridor on the map panel in response to a first user selection; and
means for displaying a second type of transportation corridor on the map panel, which overlays the first type of transportation corridor, in response to a second
25 user selection.

17. The system of claim 16, further comprising means for displaying a third type of transportation corridor on the map panel, which overlays the first and second types of transportation corridors, in response to a third user selection.

18. The system of claim 17, further comprising means for erasing one of the types
5 of transportation corridors from the map panel in response to a fourth user selection.

19. The system of claim 16, further comprising means for identifying freight shipments on one of the displayed transportation corridors.

20. The system of claim 19, further comprising means for requesting an identification password from a particular customer, wherein the means for identifying
10 further includes means for identifying only those freight shipments corresponding to the particular customer.

21. The system of claim 16, further comprising means for overlaying geographic features on the map panel in response to a third user selection.

22. A computer-useable medium embodying computer program code for causing
15 a computer to selectively display freight transportation network information by performing the steps of:

defining a map panel on a computer display;

displaying a first type of transportation corridor on the map panel in response to a first user selection; and

20 displaying a second type of transportation corridor on the map panel, which overlays the first type of transportation corridor, in response to a second user selection.

23. The computer-useable medium of claim 22, further performing the step of displaying a third type of transportation corridor on the map panel, which overlays
25 the first and second types of transportation corridors, in response to a third user selection.

24. The computer-useable medium of claim 23, further performing the step of erasing one of the types of transportation corridors from the map panel in response to a fourth user selection.

25. The computer-useable medium of claim 22, further performing the step of
5 identifying freight shipments on one of the displayed transportation corridors.

26. The computer-useable medium of claim 25, further performing the step of requesting an identification password from a particular customer, wherein the step of identifying further includes the step of identifying only those freight shipments corresponding to the particular customer.

10 27. The computer-useable medium of claim 22, further performing the step of overlaying geographic features on the map panel in response to a third user selection.

28. A system for selectively displaying freight transportation network information, comprising:

a user interface, for accepting user selections;

15 a display;

a database containing information on a first and second type of transportation corridor; and

a corridor selector, coupled to the user interface, the database and the display, for causing the first type of transportation corridor to appear on the display in
20 response to a first user selection, and for causing the second type of transportation corridor to overlay the first type of transportation corridor on the display in response to a second user selection.

29. The system of claim 28, wherein:

the database contains information on a third type of transportation corridor;

25 and

the corridor selector causes the third type of transportation corridor to overlay the first and second types of transportation corridors on the display in response to a third user selection.

30. The system of claim 29, wherein the corridor selector erases the second type of transportation corridor from the display in response to a fourth user selection.

31. The system of claim 28, wherein the database contains information on a plurality of customer shipments, further comprising a shipment selector, coupled to
5 the user interface, the database and the display, for causing the customer shipments to appear on the display in response to the user selections.

32. The system of claim 28, wherein a customer shipment from the plurality of customer shipments is only displayed in response to a user password.

33. The system of claim 28, wherein the database contains information on a
10 plurality of geographic features, further comprising a geographic feature selector, coupled to the user interface, the database and the display, for causing the geographic features to appear on the display in response to the user selections.

34. A method for accessing freight transportation network information over the internet, comprising the steps of:
15 defining a map panel on a computer display;
monitoring a position on the map panel of a cursor; and
displaying fly-over text as the cursor passes over various predetermined areas on the map panel.

35. The method of claim 34, wherein the step of displaying fly-over text
20 comprises the step of displaying a latitude and a longitude corresponding to the cursor position.

36. The method of claim 34, wherein the step of displaying fly-over text comprises the step of displaying information about a freight shipment proximate to the position of the cursor.

37. The method of claim 34, wherein the step of displaying fly-over text comprises the step of displaying information about a shipping terminal proximate to the position of the cursor.

38. The method of claim 34, wherein the step of displaying fly-over text
5 comprises the step of displaying information about a geographic feature proximate to the position of the cursor.

39. The method of claim 34, wherein the step of defining a map panel on a computer display includes the step of displaying a highway system on the map panel.

40. The method of claim 34, wherein the step of defining a map panel on a
10 computer display includes the step of displaying a road system on the map panel.

41. The method of claim 34, wherein the step of defining a map panel on a computer display includes the step of displaying a railway system on the map panel.

42. The method of claim 34, wherein the step of defining a map panel on a computer display includes the step of displaying a shipping channel system on the
15 map panel.

43. The method of claim 34, wherein the step of defining a map panel on a computer display includes the step of displaying a river system on the map panel.

44. The method of claim 36, further comprising the step of requesting an identification password from a particular user, wherein the step of displaying
20 information about a freight shipment includes the step of displaying information about only freight shipments corresponding to the particular user.

45. A method for accessing freight transportation network information over the internet, comprising the steps of:

transmitting, over an internet interface, a information containing a plurality of selections for accessing the freight transportation network information;

receiving, over the internet interface, a selection from a user for one of the plurality; and

5 presenting the user with detailed transportation network information in response to the selection.

46. A system for accessing freight transportation network information over the internet, comprising:

means for defining a map panel on a computer display;

10 means for monitoring a position on the map panel of a cursor; and

means for displaying fly-over text as the cursor passes over various predetermined areas on the map panel.

47. The system of claim 46, wherein the means for displaying fly-over text comprises means for displaying a latitude and a longitude corresponding to the cursor
15 position.

48. The system of claim 46, wherein the means for displaying fly-over text comprises means for displaying information about a freight shipment proximate to the position of the cursor.

49. The system of claim 46, wherein the means for displaying fly-over text
20 comprises means for displaying information about a shipping terminal proximate to the position of the cursor.

50. The system of claim 34, wherein the means for displaying fly-over text comprises means for displaying information about a geographic feature proximate to the position of the cursor.

25 51. The system of claim 48, further comprising means for requesting an identification password from a particular user, wherein the means for displaying

information about a freight shipment includes means for displaying information about only freight shipments corresponding to the particular user.

52. A system for accessing freight transportation network information over the internet, comprising:

- 5 transmitting, over an internet interface, a information containing a plurality of selections for accessing the freight transportation network information;
- receiving, over the internet interface, a selection from a user for one of the plurality; and
- presenting the user with detailed transportation network information in
10 response to the selection.

53. A computer-useable medium embodying computer program code for causing a computer to access freight transportation network information over the internet by performing the steps of:

- defining a map panel on a computer display;
- 15 monitoring a position on the map panel of a cursor; and
- displaying fly-over text as the cursor passes over various predetermined areas on the map panel.

54. The computer-useable medium of claim 53, wherein the step of displaying fly-over text comprises the step of displaying a latitude and a longitude
20 corresponding to the cursor position.

55. The computer-useable medium of claim 53, wherein the step of displaying fly-over text comprises the step of displaying information about a freight shipment proximate to the position of the cursor.

56. The computer-useable medium of claim 53, wherein the step of displaying
25 fly-over text comprises the step of displaying information about a shipping terminal proximate to the position of the cursor.

57. The computer-useable medium of claim 53, wherein the step of displaying fly-over text comprises the step of displaying information about a geographic feature proximate to the position of the cursor.

58. The computer-useable medium of claim 55, further comprising the step of
5 requesting an identification password from a particular user, wherein the step of displaying information about a freight shipment includes the step of displaying information about only freight shipments corresponding to the particular user.

59. A computer-useable medium embodying computer program code for causing a computer to access freight transportation network information over the internet by
10 performing the steps of:

transmitting, over an internet interface, an information containing a plurality of selections for accessing the freight transportation network information;

receiving, over the internet interface, a selection from a user for one of the plurality; and

15 presenting the user with detailed transportation network information in response to the selection.

60. A system for accessing freight transportation network information over the internet, comprising:

a user interface, for accepting user selections and cursor positions;

20 a display for displaying a first portion of the freight transportation network information;

a database for storing the freight transportation network information; and

a fly-over text generator, coupled to the user interface, the database and the display, for causing fly-over text stored in the database to appear on the display in
25 response to a cursor position.

61. The system of claim 60, wherein the fly-over text provides information on objects located proximate to the cursor position.

62. The system of claim 60, wherein the database contains information on a plurality of customer shipments, further comprising a shipment selector, coupled to the user interface, the database and the display, for causing the customer shipments to appear on the display in response to the user selections.

5 63. The system of claim 62, wherein a customer shipment from the plurality of customer shipments is only displayed in response to a user password.

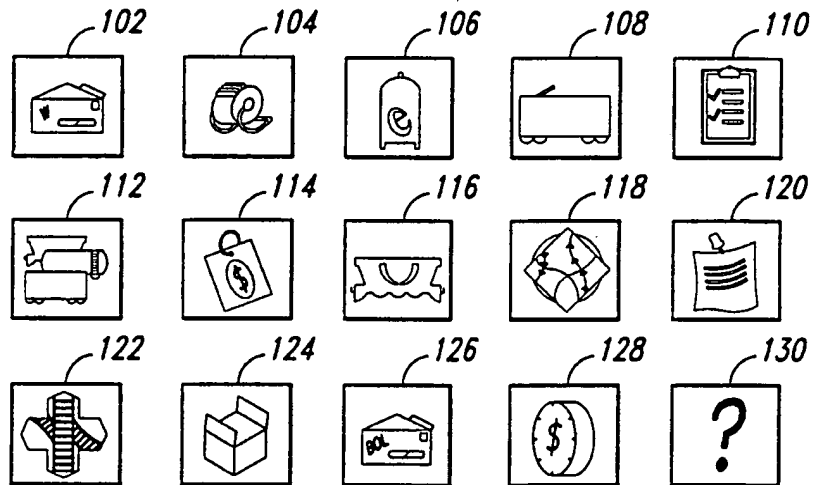
64. The system of claim 60, wherein the database contains information on a plurality of geographic features, further comprising a geographic feature selector, coupled to the user interface, the database and the display, for causing the geographic
10 features to appear on the display in response to the user selections.

100

Welcome to TWSNet

TWSNet

YOUR TRANSPORTATION WORKSTATION

*Fig. 1*

TWISNet

WAYBILL



Enter a car initial and number, then click the "Submit Query" button to retrieve waybill information on that car. When retrieving all waybills, enter start and stop dates to limit the search. If no dates are entered, the search will default to the last 14 days.

Equipment Initial: Equipment Number:

HELP

Start month: day: year:

Stop month: day: year:

Submit Query

Clear Input

Pool/ Fleet Names

- Test Pool
- Testing Pools for Size
- testfleet
- WESTVACO

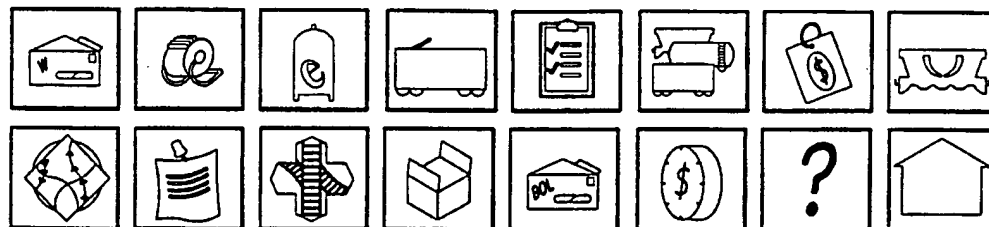


Fig. 2

TWSNet

CAR ORDERING



Car Order Main Menu

Current Date: 11/18/96

HELP

Last Transaction:

Profile Name	Description	Customer City	State	Date
GENLOUGR	60' FREERUNNER/SUSPE	LOUISVILL	KY	04-NOV-96

Customer Profiles

	Profile Name	Description	Customer City	State	MAX No. of Loads
●	GENLOUGR	100T 52 FT STEEL FLO	LOUSVILL	KY	010
●	GENLOU19	60" FREERUNNER/SUSPE	LOUISVILL	KY	050

Car Order/Forecast

Car Order Status

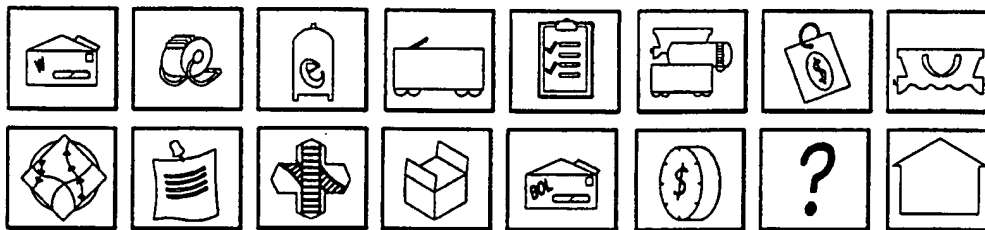
Return to TWSNet Main Menu

Fig. 3

4/7/20

TWISNet

SHIPMENT STATUS



Please enter an equipment id to trace, or select from the pool/ fleet list.

HELP

Equipment Initial: Equipment Number:

Start month: day: year:

Stop month: day: year:

Submit Query

Clear

Pool/ Fleet Names

Fleet Name	Last Trace Time	Detail
Test Pool		Car List
Testing Pools for Size		Car List
testfleet		Car List
WESTVACO		Car List

No Fleets Defined.

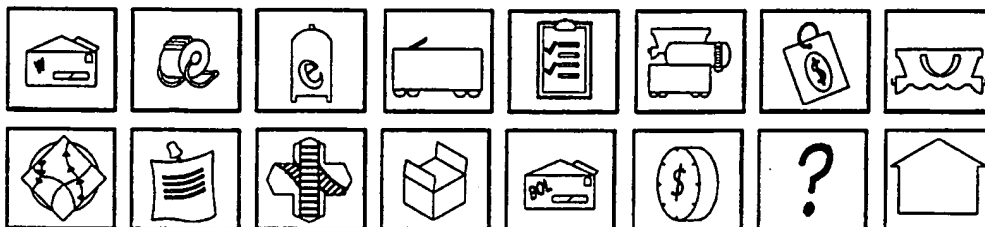


Fig. 4

TWISNet

POOL MANAGEMENT



Please choose one of the Pools below:

HELP

Test Pool	▲
Testing Pools for Size	
testffleet	
WESTVACO	
	▼

Please choose one of the following options:

Edit Pool

Add Equipment to Pool

Delete Pool

Create Pool

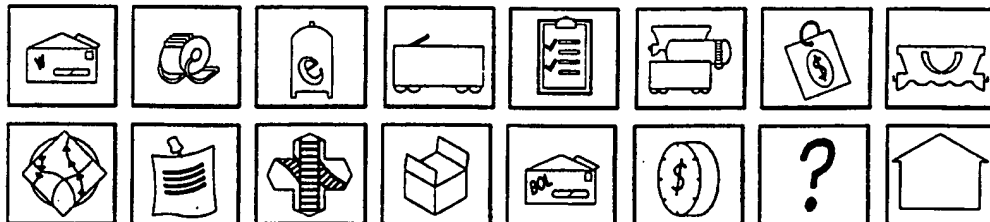


Fig. 5

6-7-20

TWISNet

PRICE



HELP

Please select a function by clicking on its name.

Request Price

Look up Market Manager

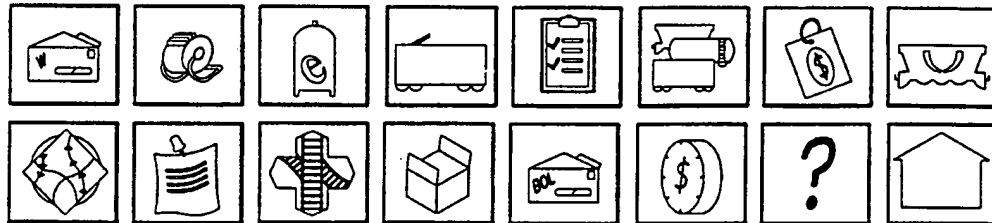


Fig. 6

TWISNet

UMLER



Equipment Information

HELP

Format Type: Information ▾

Submit Query

Clear Input

Initial: <input type="text"/>	Number: <input type="text"/>	Initial: <input type="text"/>	Number: <input type="text"/>
Initial: <input type="text"/>	Number: <input type="text"/>	Initial: <input type="text"/>	Number: <input type="text"/>
Initial: <input type="text"/>	Number: <input type="text"/>	Initial: <input type="text"/>	Number: <input type="text"/>
Initial: <input type="text"/>	Number: <input type="text"/>	Initial: <input type="text"/>	Number: <input type="text"/>
Initial: <input type="text"/>	Number: <input type="text"/>	Initial: <input type="text"/>	Number: <input type="text"/>
Initial: <input type="text"/>	Number: <input type="text"/>	Initial: <input type="text"/>	Number: <input type="text"/>
Initial: <input type="text"/>	Number: <input type="text"/>	Initial: <input type="text"/>	Number: <input type="text"/>
Initial: <input type="text"/>	Number: <input type="text"/>	Initial: <input type="text"/>	Number: <input type="text"/>
Initial: <input type="text"/>	Number: <input type="text"/>	Initial: <input type="text"/>	Number: <input type="text"/>
Initial: <input type="text"/>	Number: <input type="text"/>	Initial: <input type="text"/>	Number: <input type="text"/>

Fig. 7

TWSNet

BULLETIN BOARD



HELP

Several bulletin boards are available to TWSNet users. Click one of the bulletin board topics below to view an index of postings.

Whats New! - Check out the latest information on TWSNet

TWSNet News - Check this group for news about TWSNet

TWSNet Feedback - Let us know what you think about TWSNet

TWSNet Help - Having some trouble with some aspect of TWSNet? Get help here!

TWSNet Bugs - report any bugs you may run into here, or learn about bug fixes as they are released.

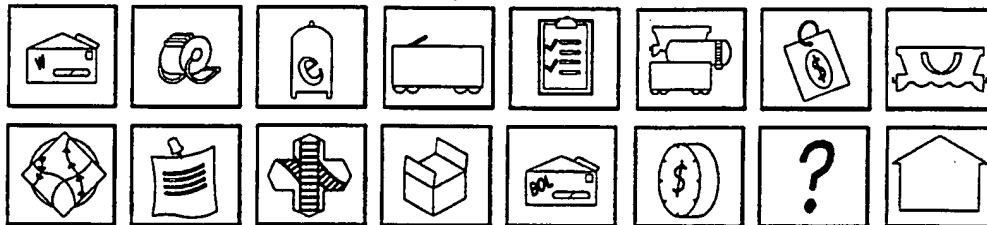
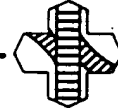


Fig. 8

TWISNet

YARD MANAGEMENT



Please select a plant by clicking on its name

HELP

Customer Plants

Plant Name	City	ST
GENERAL ELECTRIC	APPLIANCE PARK	KY

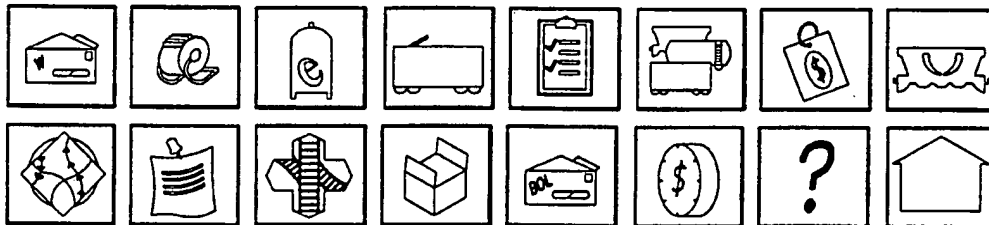


Fig. 9

TWISNet

YARD MANAGEMENT



Please select an option by clicking on its name

Options

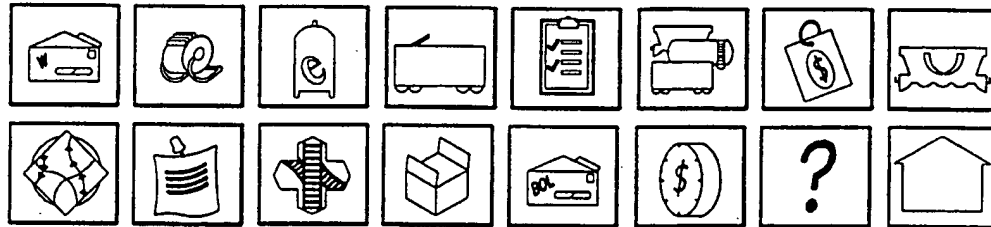
Enroute InquiryYard InquiryIndustrial InquiryCustomer Notification InquiryPlant Switch InquiryPlant Switch RequestPlant Switch Modification

Fig. 10

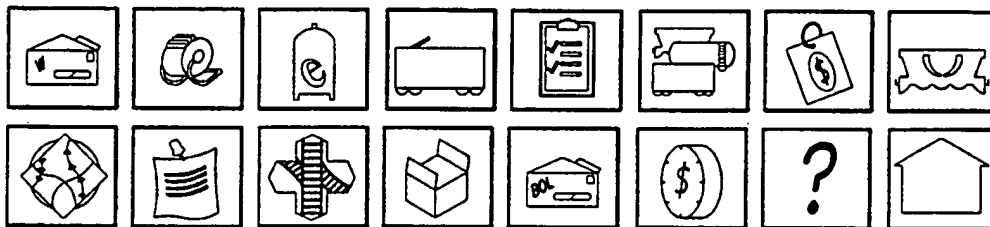
TWSNet

FREIGHT CLAIMS



HELP

Please select a function by clicking on its name.

Create a ClaimEdit a ClaimSend a ClaimAmend Acknowledged ClaimMaintain Claims*Fig. 11*

TWSNet

FREIGHT CLAIMS


 Claimant's Claim No.: Shipment Date: Month: Day: Year:

 Waybill No.: Shipper/Consignee/Other: ☒ Shipper ☐ Consingee ☐ Other

 Equip. Initial and No.: Nature of Damage:

Save

Clear

	Commodity Description	QTY	Unit Code	Cost Per Unit (\$)	Salvage Allow (\$)	Line Amount (\$)
1	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/> <input type="button" value="v"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>
2	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/> <input type="button" value="v"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>
3	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/> <input type="button" value="v"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>
4	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/> <input type="button" value="v"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>
5	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/> <input type="button" value="v"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>
6	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/> <input type="button" value="v"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>
7	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/> <input type="button" value="v"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>
8	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/> <input type="button" value="v"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>
9	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/> <input type="button" value="v"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>
10	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/> <input type="button" value="v"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>

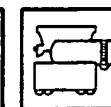
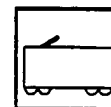


Fig. 12

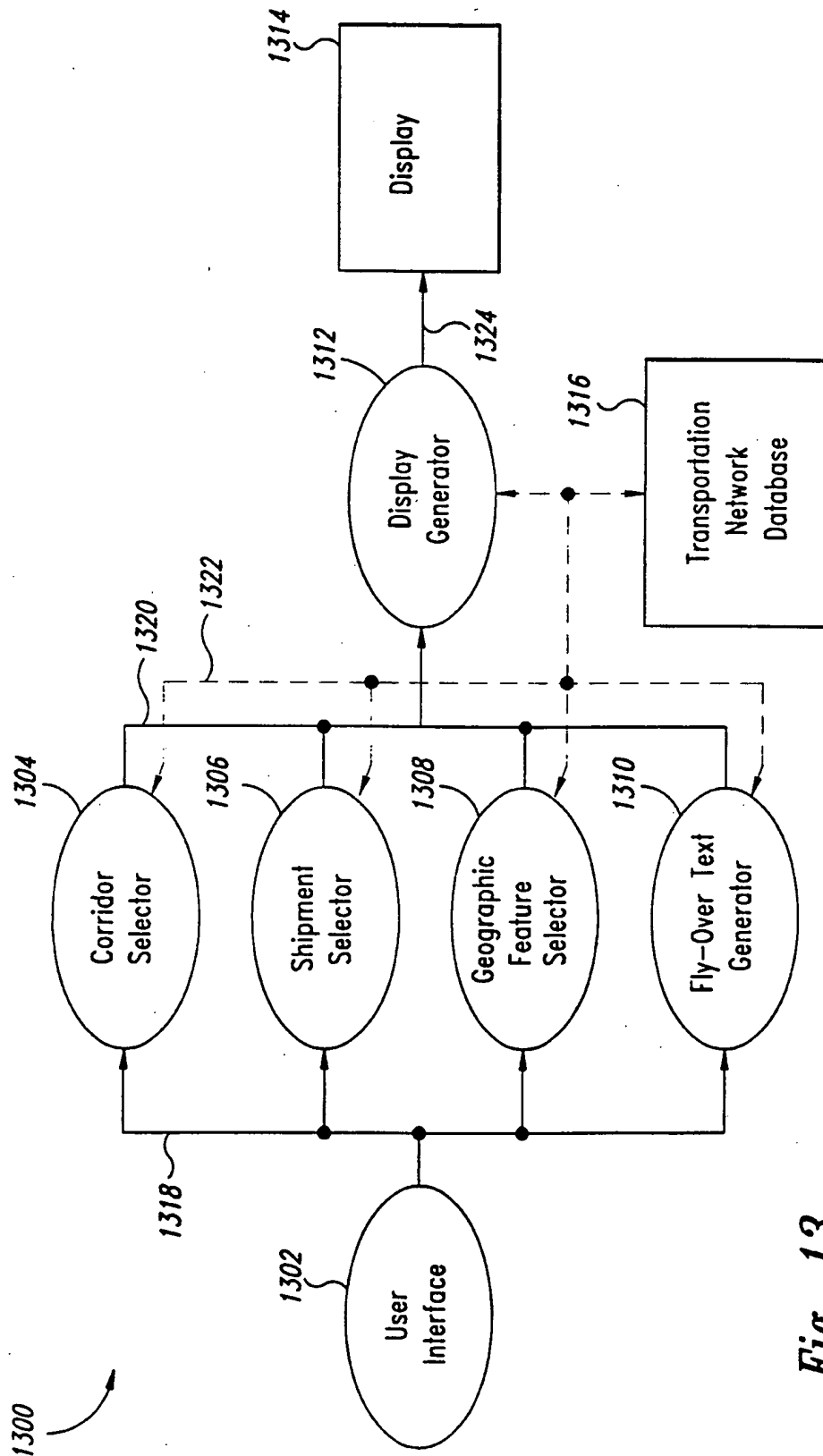


Fig. 13

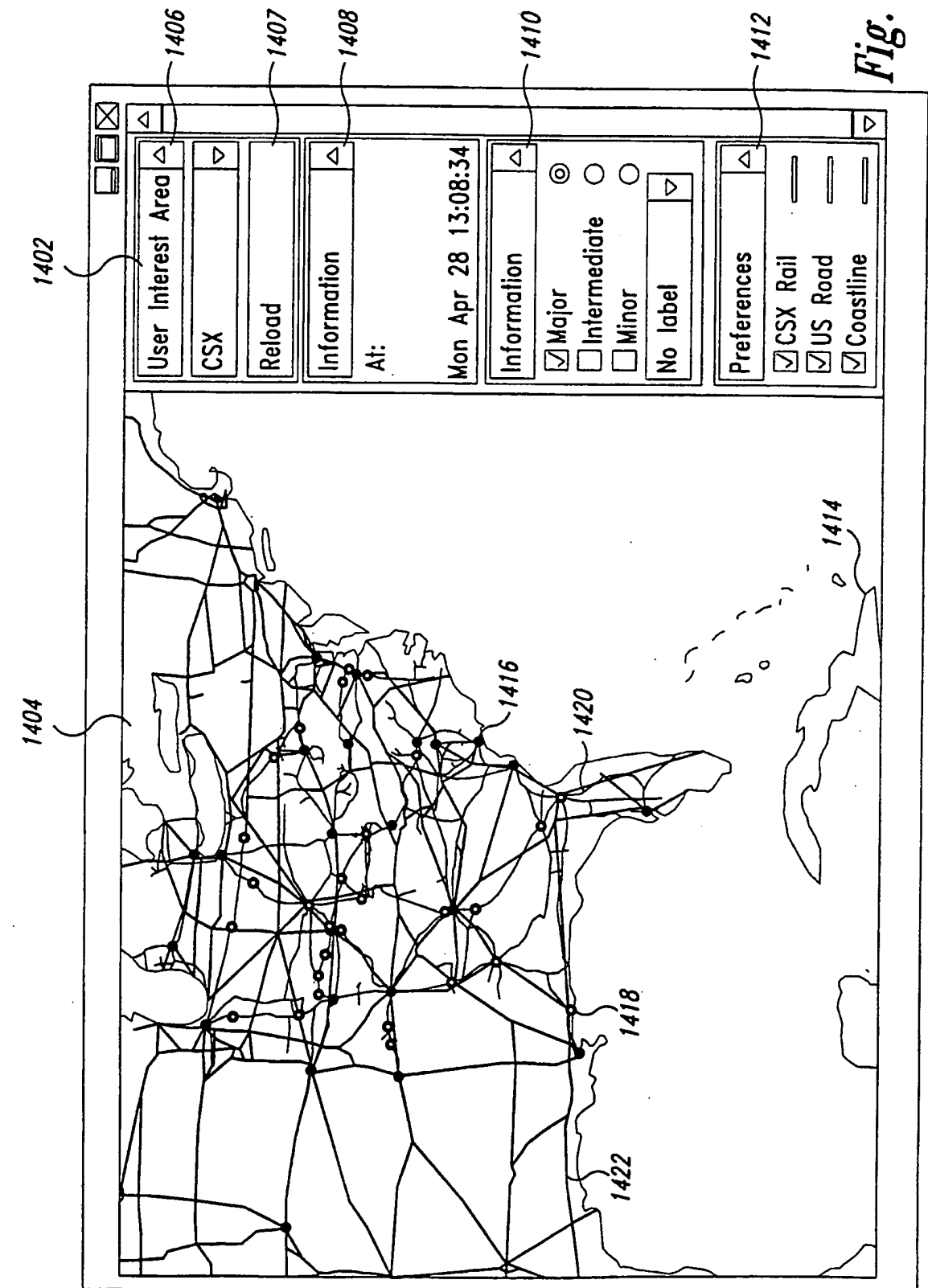


Fig. 14

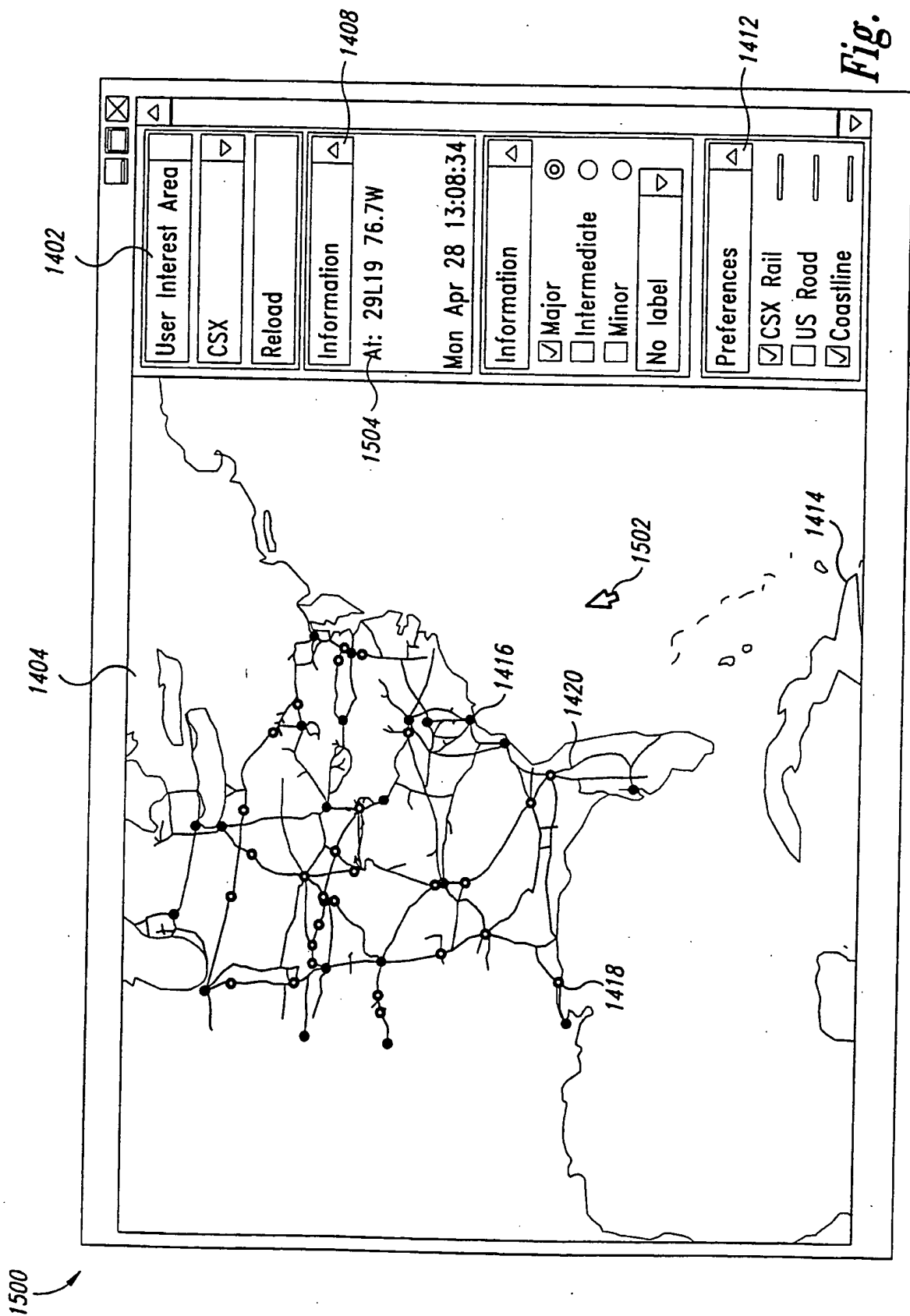


Fig. 15

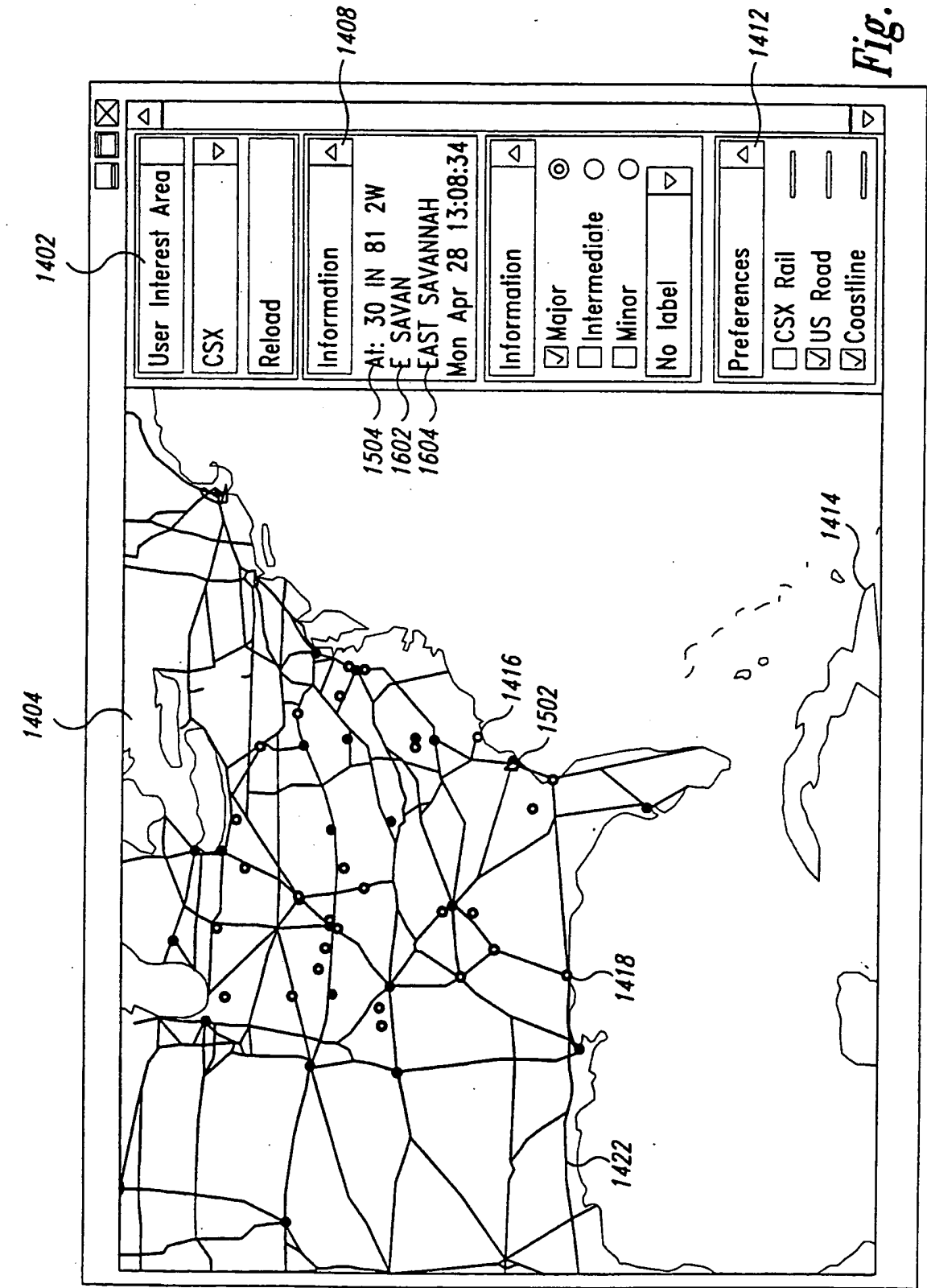


Fig. 16

1600

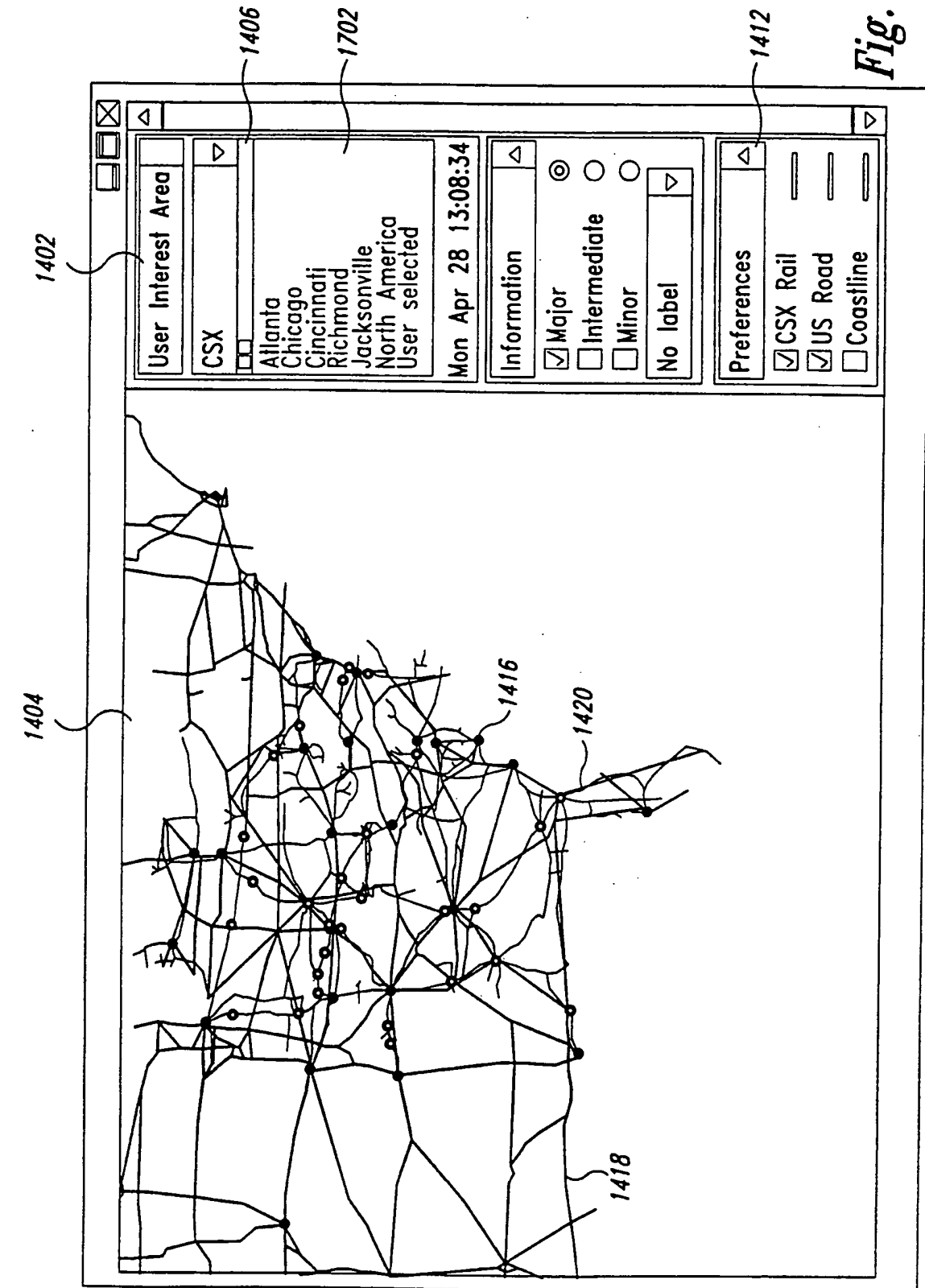


Fig. 17

1700

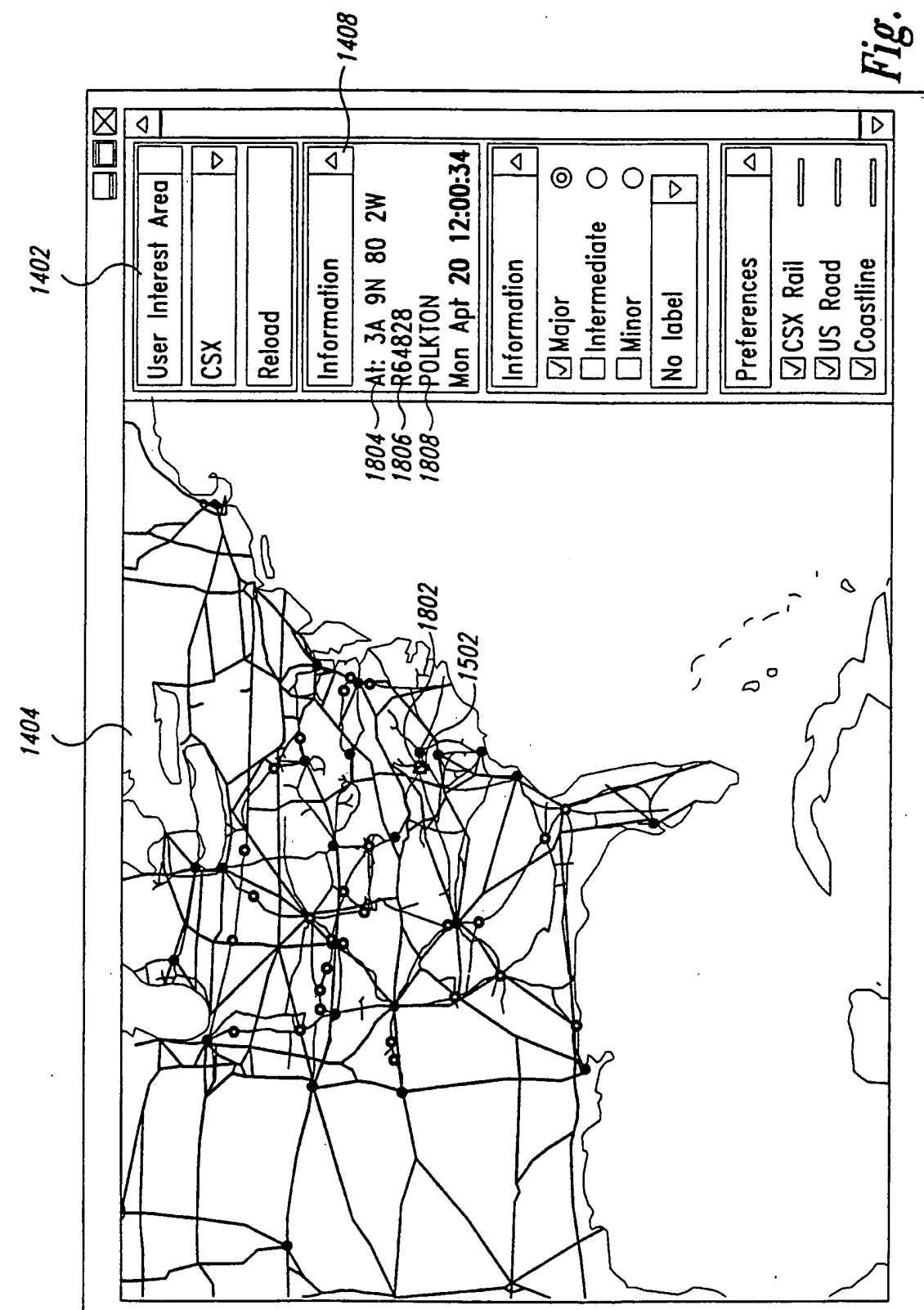


Fig.

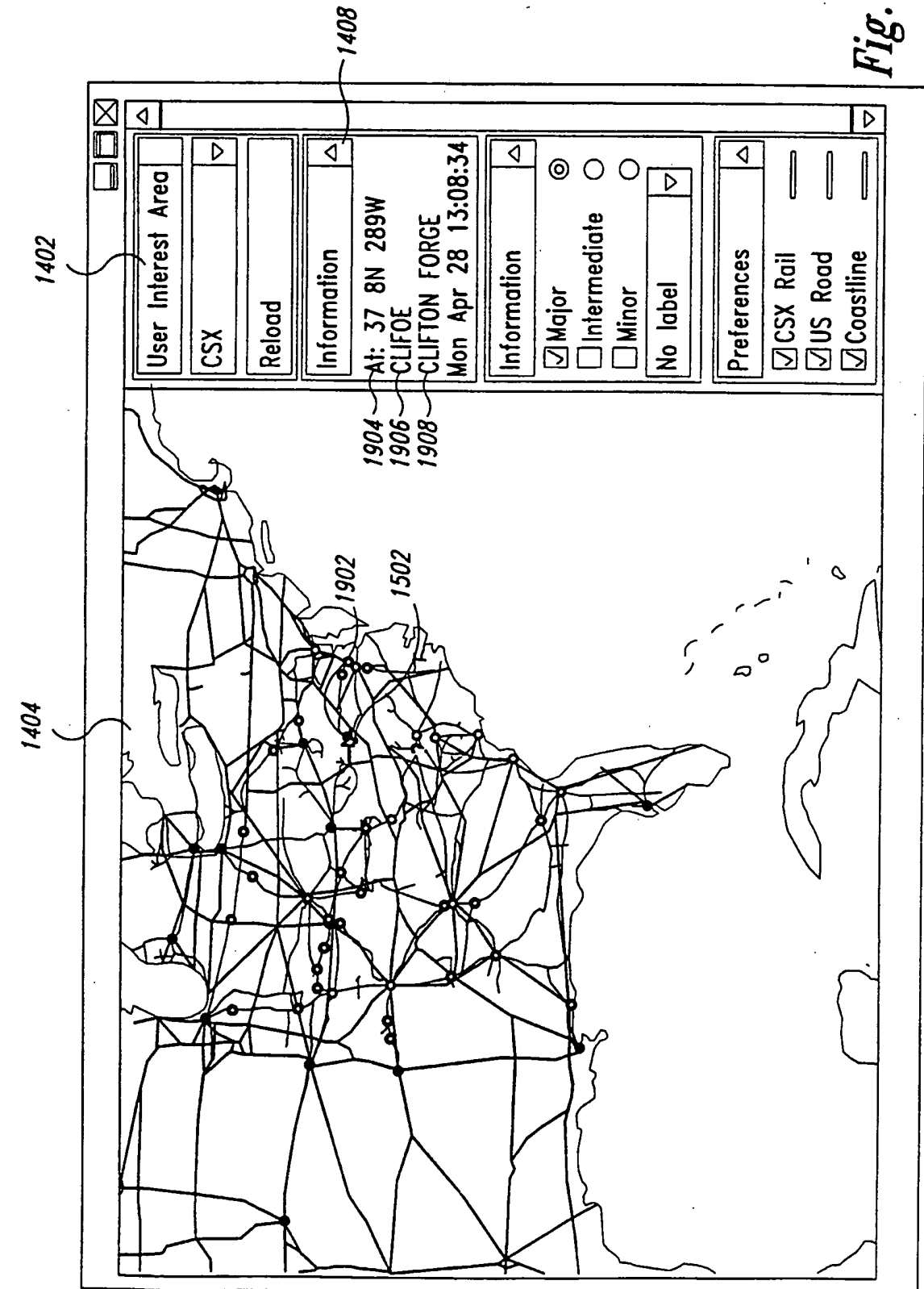
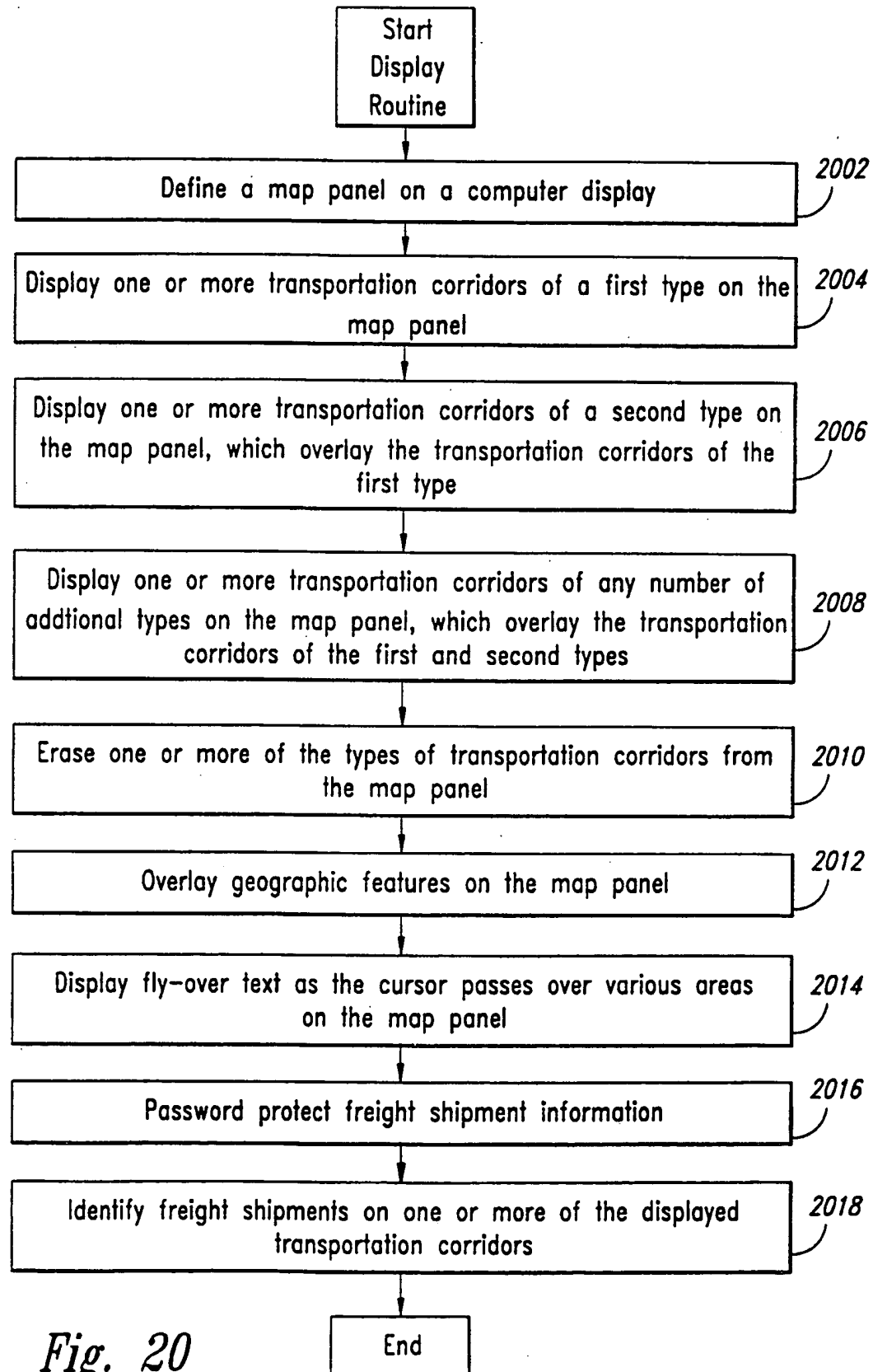


Fig. 19

*Fig. 20*

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US 98/15825

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G06F 17/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	BANKS K M: "DATATRAK automatic vehicle location and position reporting system" CONFERENCE RECORD OF PAPERS PRESENTED AT THE FIRST VEHICLE NAVIGATION & INFORMATION SYSTEMS CONFERENCE (VNIS '89) (CAT. NO.89CH2789-6), TORONTO, ONT., CANADA, 11-13 SEPT. 1989, pages 214-218, XP000089890	1-33, 45, 52, 59
Y	ISBN 0-9692316-2-8, 1989, New York, NY, USA, IEEE, USA see page 217, line 66 - page 218, line 77 --- -/--	34-44, 46-51, 53-58, 60-64

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

15 December 1998

Date of mailing of the international search report

13/01/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Suendermann, R

INTERNATIONAL SEARCH REPORT

National Application No.

PCT/US 98/15825

(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 757 309 A (IBM) 5 February 1997 see abstract ----	34-44, 46-51, 53-58, 60-64
A	SHIBATA M: "Applications of digital road maps in Japan" TOWARDS AN INTELLIGENT TRANSPORT SYSTEM. PROCEEDINGS OF THE FIRST WORLD CONGRESS ON APPLICATIONS OF TRANSPORT TELEMATICS AND INTELLIGENT VEHICLE-HIGHWAY SYSTEMS, PROCEEDINGS OF THE FIRST WORLD CONGRESS ON ATT & IVHS, PARIS, FRANCE, 30 NOV.-3 DEC. 199, pages 229-232 vol.1, XP002088023 ISBN 0-89006-810-0, 1995, London, UK, Artech House, UK see page 231, line 41 - line 45 see page 230, line 21 - line 47 ----	1-64
A	US 5 032 989 A (TORNETTA MARK A) 16 July 1991 see abstract ----	1, 16, 22, 28, 34, 45, 46, 52, 53, 59, 60
A	EP 0 772 174 A (AISIN AW CO) 7 May 1997 see abstract -----	1, 16, 22, 28, 34, 45, 46, 52, 53, 59, 60

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No.

PCT/US98/15825

Patent documents cited in search report		Publication date		Patent family member(s)	Publication date
EP 0757309	A	05-02-1997	US	5721851 A	24-02-1998
			JP	9044335 A	14-02-1997
US 5032989	A	16-07-1991	US	4870576 A	26-09-1989
EP 0772174	A	07-05-1997	JP	9292257 A	11-11-1997
			JP	9292260 A	11-11-1997
			JP	9184735 A	15-07-1997

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